Nurses' Performance Regarding Chemotherapy Administration in the Clinic

Thesis

Submitted for Partial Fulfillment of the Requirement of the Master Degree in

(Medical –Surgical Nursing / Critical Care Nursing)

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Ghada Ahmed Mohammed Seddek

LIST OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

Abb.	Meaning
ADL	: Activities of Daily Living
CBC	: Complete Blood Count
CNS	: Central Nervous System
CSF	: Cerebro Spinal Fluid
CVAD	: Central Venous Access Device
CVD	: Central Venous Device
DNA	: Deoxyribo Nucleic Acid
ECG	: Electro Cardio Gram
FDA	: Food and Drug Administration
GI	: Gastro Intestinal
IV	: Intravenous
MCQs	: Multiple choice questions
NPO	: Non Per Os, Nothing by Mouth
PPE	: Protective Personal Equipment
RBCs	: Red Blood Cells
RNA	: Ribo Nucleic Acid
WBC	: White Blood Cell
WHO	: World Health Organization

Abstract

Back ground: Chemotherapy is one of the major categories of the medical discipline specifically devoted to pharmacotherapy for cancer, which is called medical oncology. Chemotherapy is a category of cancer treatment that uses one or more anti-cancer drugs (Chemotherapeutic agents) as part of a standardized chemotherapy regimen. The goal of chemotherapy is to stop or slow the growth of cancer cells. The handling and administration of cytotoxic drugs are hazardous potentially to the health care professionals involved in their preparation and administration, and to the patients receiving them. **Aim of the study:** Assess nurses' performance regarding chemotherapy administration in the clinic through: Assess the nurses'level of knowledge regarding chemotherapy administration in the clinic, assess the nurses'level of practice regarding chemotherapy administration in the clinic and assess the nurses'level of attitude regarding chemotherapy administration in the clinic. **Research design:** Adescriptive exploratory design was utilized. **Setting:** the study was carried out in chemotherapy clinic at El-Fayoum University Hospital. **Study subjects:** Purposive sample of (30) nurses who works in chemotherapy clinic included in the study. **Data collection tools**: Data were obtained through demographic data tool, nurses' knowledge questionnaire, nurses' observational checklist and nurses' attitude questionnaire. **Results:** More than two-thirds (66.7%) of the studied nurses had unsatisfactory level of knowledge and majority (83.3%) of studied nurses had unsatisfactory level of practice regarding chemotherapy administration. Approximately three quarters (73.3%) of the studied nurses had negative attitude regarding chemotherapy administration. There were highly statistically significant relations between the nurses' level of knowledge, practice and attitude regarding chemotherapy administration and their demographic characteristics as age. **Recommendations:** Designing in-service training and educational program to improve nurses' knowledge, practice and attitude regarding chemotherapy administration.

Keywords: Nurses' Performance, Chemotherapy, Administration in the Clinic.

Introduction

Chemotherapy (chemo) usually refers to the use of medicines or drugs to treat cancer **(American Cancer Society, 2016)**. Treatment that uses drugs to stop the growth of cancer cells, either by killing the cells or by stopping them from dividing. Chemotherapy may be given by mouth, injection, or infusion, or on the skin, depending on the type and stage of the cancer being treated. It may be given alone or with other treatments, such as surgery, radiation therapy, or biologic therapy **(National Cancer Institute, 2017)**.

Chemotherapy (sometimes just called 'chemo') is the use of drugs to kill or slow the growth of cancer cells. The drugs are called cytotoxics, which means toxic to cells (cyto). Some of these drugs are obtained from natural sources such as plants, while others are completely created in a laboratory. Chemotherapy drugs enter the bloodstream and travel throughout the body to reach cancer cells in the organs and tissues. Sometimes chemotherapy is delivered directly at the tumor site rather than via the bloodstream **(Bruce, 2016).**

In 2012, an estimated 14.1 million new cases of cancer occurred worldwide. There were around 357,000

new cases of cancer in the UK in 2014, that's 980 cases diagnosed every day. In males, there were around 181,000 cases of cancer diagnosed in the UK in 2014. In females, there were around 176,000 cases of cancer diagnosed in the UK in 2014. Every two minutes someone in the UK is diagnosed with cancer **(WHO, 2017)**. In Egypt population in 2012 were 83.9 m and people newly diagnosed with cancer were 108,600 **(Cancer Index, 2017)**.

Each year about 650,000 cancer patients receive chemotherapy in an outpatient oncology clinic in the United States. More than 400 cytotoxic agents are available for commercial or experimental use with approval by the fedral Food and Drug Administration (FDA) **(Centers of Disease Control and Prevention, 2015)**.

The goals of chemotherapy depending on the type of cancer, its stage (how far it has spread), and where the patient is in the treatment process, chemotherapy can be used to: Cure the cancer, Keep the cancer from spreading, Slow the cancer's growth, Kill cancer cells that may have spread to other parts of the body and Relieve symptoms caused by cancer **(American Cancer Society, 2014)**.

A careful balance between killing the cancer cells and not damaging the healthy cells needs to be kept. This balance is mainly dependent on the dosage and administration route of the cytostatic agent as well as on when and how often it is given. The chemotherapy drug can be taken **orally** in form of as a tablet, capsule, or juice, and is absorbed through the oral, gastric, and intestinal mucosa into the blood. The medication travels throughout the bloodstream and is carried to organs that process it further so that it can exert its effects on the cancer. Not every medication may reach the bloodstream through the digestive tract, thereby requiring other routes of administration **(Tallen, 2015)**.

The chemotherapy medication is also given directly into a vein by using a syringe or an indwelling venous catheter (central venous catheter). The drugs given **intravenously** can be expected to have a faster effect. Intravenous administration may be performed as a rapid injection called "bolus" or as a short- or long-term infusion. Another route of administration is **the subcutaneous** means "under the skin" **(Cancer Research UK, 2017)**.

Also it can be given by **intramuscular** injection that means "into the muscle" or **intrathecal** that means "into the cerebrospinal fluid (CSF)". The drug is injected

via a lumbar puncture into the CSF to reach the central nervous system (CNS), and **intraventricular route** that means "into the ventricle" (of the brain). The drug is administered through a Rickham or Ommaya reservoir into one of the side ventricles, from where it distributes into the central nervous system (CNS) **(Cancer Research UK, 2017)**.

There are numerous anti-cancer drugs today, and the manner in which they attack cancer cells differs according to their classification. Regardless of the method of administration, all are absorbed into the blood and circulated throughout the body. Patients may be given one drug, or a combination of two or more drugs, however, since many cancers require drugs that kill cancer cells in different ways and at different phases in the cell cycle, combination chemotherapy is most often recommended to increase effectiveness. The classes of chemotherapy drugs based on their chemical structure and the mechanism they use to attack cancer cells are**: alkylating agents, antimetabolites, anthracyclines, plant alkaloids (Canadian Cancer Society, 2017).**

Anticancer treatments are systemic treatments that may produce many and varied side effects, both long and short term, throughout the body. These effects will vary

depending on the doses and combinations of the drugs prescribed. Some common side effects are: nausea and vomiting, diarrhea, stomatitis, anorexia, bone marrow depression, risk of infertility, alopecia, fatigue, renal toxicity, cardiac toxicity, extravasation and central nervous system toxicity. It is essential that relevant health care professionals have a good knowledge of the possible side effects of the chemotherapy, which is being delivered so that they can ensure the patient is fully informed **(American Society of Clinical Oncology, 2017).**

There is sufficient evidence to indicate that staff who prepare and administer cytotoxic drugs and deal with contaminated body fluids are potentially at risk and measures to minimize exposure should be taken. Expert review suggests that efforts should focus on improving drug handling and staff education, and on compliance with guidelines for good practice rather than pursuing measurement of occupational exposure. The risks fall into two categories: The proven local effects caused by direct contact with the skin, eyes and mucous membranes, e.g. dermatitis, inflammation of the mucous membranes, blistering, allergic reactions and The systemic effects of inhaling, ingesting or injecting cytotoxic drugs during administration **(Landry, 2017)**.

Reducing the risk includes: Using appropriate gloves; change gloves and changing them as manufacturers recommend, wash hands thoroughly after all handling activities, change out of protective clothing used when not handling cytotoxics, do not eat, drink or apply make-up in environments where cytotoxic drugs given, stored or disposed of and ensure effective cleaning of all equipment and environment **(Mills, 2017)**.

Direct exposure to cytotoxic drugs can occur during administration or handling, and can be the result of inhalation, ingestion or absorption. The health risk of any procedure involving cytotoxic drugs stems from the inherent toxicity of the drug and the extent to which health care workers and patients are exposed **(Aesty, Coakely, Cheng & Cividino, 2015)**.

All staff involved in the handling of cytotoxic drugs should attend a training session on the handling of cytotoxic drugs and on the management of cytotoxic spillages as part of their orientation and yearly update. Protective Personal Equipment (PPE) is necessary when handling cytotoxic drugs and cytotoxic waste. PPE worn during administration and disposal of cytotoxic medication and when dealing with a cytotoxic spillage should include: gloves, gown/ apron, eye protection and masks **(Aesty et al., 2015)**.